AMENDMENTS TO THE CLAIMS

1-19. (Canceled)

20. (Currently Amended) A plasma etching method of performing plasma etching to ~~an object made of silicon~~ a silicon-on-insulator (SOI) substrate in a treatment chamber, said plasma etching method comprising:

introducing, into the treatment chamber, an etching gas which includes a fluorine compound gas and a rare gas;

energizing the etching gas into a plasma state by supplying electricity to the etching gas, the electricity having a frequency that is equal to or more than 27 MHz; and

etching the object using the plasma,

wherein the fluorine compound gas is ~~one of~~ sulfur hexafluoride (SF_6) gas ~~and nitrogen trifluoride (NF_3) gas~~,

wherein the rare gas is helium (He) gas,

wherein a volumetric flow rate of the helium (He) gas introduced into the treatment chamber is equal to or more than 80% of a total volumetric flow rate of the etching gas, and

wherein the etching gas does not contain oxygen (O_2) gas and further includes polymer forming gas.

21 - 23 . (Canceled)

24. (Currently Amended) The plasma etching method according to Claim [[21]]20,

wherein an inside wall of the treatment chamber is made of an insulating material.

25. (Original) The plasma etching method according to Claim 24,

wherein the insulating material is one of quartz, alumina, an aluminum matrix with alumite treatment, yttrium oxide, silicon carbide, and aluminum nitride.

26. (Original) The plasma etching method according to Claim [[21]]20,

wherein the etching gas further includes chlorine (Cl_2) gas.

27. (Previously Presented) The plasma etching method according to Claim 26,

wherein a volumetric flow rate of the chlorine (Cl_2) gas introduced into the treatment chamber is equal to or less than 10% of a total volumetric flow rate of the etching gas.

28 - 30 . (Canceled)

31. (Currently Amended) The plasma etching method according to Claim [[30]]20,

wherein the polymer forming gas is one of ~~octafluorocyclobutane (C_4F_8) gas, trifluoromethane (CHF_3) gas,~~ octafluorocyclopentene (C_5F_8) gas[[,]] and hexafluorobutadiene (C_4F_6) gas.

32. (Currently Amended) The plasma etching method according to Claim 20,

wherein ~~the fluorine compound gas is sulfur hexafluoride (SF_6) gas~~,

the etching gas comprises a first etching gas, and

etching the ~~object~~ SOI substrate using the plasma constitutes a first etching,

the method further comprising:

a second etching of the ~~object~~ SOI substrate after the first etching using a second etching gas which includes a polymer forming gas and sulfur hexafluoride (SF_6) gas as a fluorine compound gas.

33. (Previously Presented) The plasma etching method according to Claim 20,

wherein the etching gas is energized into a plasma state by an inductively coupled plasma (ICP) method.

34 - 37. (Canceled)